

14. The semiconductor device according to claim 1, 4 or 5 wherein said source and drain regions comprise a metal silicide.

15. The semiconductor device according to any one of claims 1-6 or 11 wherein the length of said impurity doped region of said first thin film transistor is not larger than 2 μm .

16. The semiconductor device according to any one of claims 1, 4 or 5 wherein the length of said impurity doped region of said first thin film transistor is not larger than 5 μm .

17. The semiconductor device according to any one of claims 1-6 or 11 wherein said gate electrode is located over said channel region. --

REMARKS

The Office Action of July 26, 2000 has been carefully studied. Claims 1-11 were pending prior to this instant amendment. By this amendment, claims 1-6, and 11 are amended, and new claims 12-17 have been added. Accordingly, claims 1-17 are presently pending in the instant application.

At the outset the Examiner is thanked for his review of the patent application.

Referring now to the Office Action, the drawings stand objected to for not labeling Fig. 4A as "Prior Art". Applicant proposes to amend Figure 4A, as indicated in red on the attached Request for Approval of Drawing Corrections which add the "Prior Art" legend to Fig. 4A. Accordingly, withdrawal of the objections to the Figures is respectfully requested.

Claims 1, 5, 7, 9 and 11 stand rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by Lee. Claims 2, 6, 8 and 10 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Lee. Further, claims 3 and 4 stand rejected as allegedly being unpatentable over Lee in view of Chae. These rejection are respectfully traversed.

Initially, the present invention is directed to a semiconductor device such as an active matrix display device, for example, a liquid crystal display device or an electroluminescent

display device although the electroluminescent display is not explicitly taught in the specification. The present invention is particularly directed to a thin film transistor having a lightly doped region. The rejected claims are primarily characterized by the lightly doped region having a length of 0.4 to 5 μm .

Applicants have amend independent claims 1, 2, 3, 5, 6 and 11, as shown above, to recite a TFT driver circuit formed on the same substrate as the pixel TFT. Lee does not disclose a TFTdriver circuit formed on the same substrate as a pixel TFT. Accordingly, Applicants' invention recited in claims 1, 5, 7, 9, and 11 is distinguished over the disclosed invention of Lee, and reconsideration and withdrawal of the § 102(e) rejection is respectfully solicited.

Also, Applicants have amended claims 2, 3, 6 and 11 to further recite a limitation wherein the LDD region is overlapped with the gate electrode, as taught in the present specification, at least, e.g., page 12, second paragraph.

With respect to the § 103 rejection of claims 2, 6, 8, and 10, Applicants respectfully submit that the argument set forth above against the § 102(e) rejection of claims 2 and 6, and the additional recitation of the LDD region overlapped with the gate electrode in claims 2 and 6 further distinguish Applicants' claimed invention from that disclosed by Lee.

It is well-established that, in order to show obviousness, all limitations in the claim must be taught or suggested by the prior art. In Re Boyka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974); MPEP § 2143.03. It is error to ignore specific limitations distinguishing over the references. In Re Boe, 184 U.S.P.Q. 38, 505 F.2d 1297 (C.C.P.A. 1974); In Re Saether, 181 U.S.P.Q. 36, 492 F.2d 849 (C.C.P.A. 1974); In Re Glass, 176 U.S.P.Q. 489, 472 F.2d 1388 (C.C.P.A. 1973). Lee does not teach, suggest, or imply a TFT driver circuit formed on the same substrate as the pixel TFT and a LDD region overlapped with the gate electrode.

Accordingly, the § 103 rejection of claims 2, 6, 8, and 10 over Lee is respectfully requested to be reconsidered and withdrawn.

Applicants have amended claims 1, 3, and 5 to further recite a limitation in which the LDD length of the driver circuit TFT is smaller than the LDD length of the pixel TFT so as to avoid possible rejection based on Kunii et al. (U.S. Patent 5,412,493).

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Applicants also have amended claim 4 to recite additional feature wherein the pixel electrode is formed on a same interlayer insulating film as a source electrode. Such feature is depicted in at least, e.g., Figs. 8A and 8B.

As claim 3 is amended to recite an additional feature in which the LDD length of the driver circuit TFT is smaller than the LDD length of the pixel TFT, and as claim 4 is amended to recite additional feature wherein the pixel electrode is formed on a same interlayer insulating film as a source electrode, the Office's rejection of claims 3 and 4 under 35 U.S.C. § 103 as allegedly unpatentable over Lee in view of Chae has become insupportable. Accordingly, reconsideration and withdrawal of the § 103 rejection of claims 3 and 4 is respectfully requested.

Regarding the support for the claim amendments, all the claims are supported by either or both of Examples 1 and 3. Although these examples may seem to be very similar to each other, there are some differences. For example, the upper limit of the LDD region is 2 mm in Ex. 1 while the upper limit is 5 mm in Ex. 3. Also, the above mentioned feature that the LDD region is overlapped with the gate electrode is disclosed in Ex. 1.

Although there does not appear to be explicit teaching of a pixel electrode in Ex. 1. Applicants contend that Fig. 8A teaches a pixel electrode because Fig. 8B and Fig. 8A are very similar and the element 508 of Fig. 8B is taught as a pixel electrode. As a result, the specification and Fig. 8B are amended to insert a reference to a pixel electrode.

Moreover, it should be noted that carbon, nitrogen or oxygen may be intentionally implanted into a high resistance region (which corresponds to an LDD) of a TFT in the preferred embodiments of the invention. Applicants contend, however, that the claimed TFT does not need such a region doped with CNO. As a result, this feature is merely provided for in dependent claims.

Further, Applicants' new Abstract of the Disclosure submitted herewith is in accordance with the amended claims 1 and 2.

CONCLUSION

Having responded to all the rejections set forth in the outstanding Office Action, it is submitted that claims 1-17 are in condition for allowance. Notice to that effect is respectfully

solicited. In the event that the Examiner is of the opinion that a brief telephone or personal interview will facilitate allowance of one or more of the above claims, he is courteously requested to contact applicant's undersigned representative.

Respectfully submitted,



Jeffrey L. Costellia
Registration No. 35,483
Nixon Peabody, LLP
8180 Greensboro Drive, Suite 800
McLean, Virginia 22102
(703) 790-9110
(703) 883-0370 (Fax)

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